

What is claimed is:

1. A method for operating a cardiac pacing device, comprising:
sensing a parameter related to cardiac output;
5 outputting pacing pulses to a selected subset of a plurality of pacing electrodes in accordance with a programmed pacing mode, wherein the subset of electrodes to which pulses are output is defined by a pulse output configuration; and,
switching the pulse output configuration utilized for one or more cardiac cycles to another pulse output configuration for one or more subsequent cardiac cycles in
10 accordance with a switching algorithm dependent upon the sensed parameter related to cardiac output.
2. The method of claim 1 further comprising sensing intra-thoracic impedance to derive the parameter related to cardiac output.
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3. The method of claim 1 further comprising outputting non-excitatory stimulation pulses to selected electrodes in conjunction with pacing pulses.
4. The method of claim 1 wherein the switching algorithm comprises switching
20 the pulse output configuration on a beat-to-beat basis.
5. The method of claim 1 wherein the switching algorithm comprises switching the pulse output configuration at a specified time interval.
- 25 6. The method of claim 1 wherein the switching algorithm comprises switching the pulse output configuration after a specified number of heart beats.
7. The method of claim 1 wherein a pulse output configuration is further defined as a temporal sequence of pulses output to the fixed electrodes during a cardiac cycle.

8. The method of claim 1 wherein the stimulation pulses are output to a bipolar electrode having tip and ring electrodes disposed near a heart chamber, and further comprising switching the pulse output configuration by alternating the polarity of the delivered pulses.

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9. The method of claim 1 further comprising switching the pulse output configuration in accordance with the mean or minimum heart rate measured over a time interval.

10 10. The method of claim 1 further comprising switching the pulse output configuration in accordance with a sensed time delay of a depolarization occurring in an area of the myocardium after delivery of a pacing pulse.

11. A cardiac pacemaker, comprising:

15 a plurality of electrodes adapted for disposition near a heart chamber;
a plurality of defined pulse output configurations, wherein each pulse output configuration constitutes a subset of the plurality of the electrodes;
a sensor for sensing a parameter related to cardiac output;
a control unit and pulse generating circuitry for outputting pacing pulses to a
20 selected one of the plurality of pulse output configurations in accordance with a programmed mode;

wherein the control unit is programmed to utilize a first pulse output configuration during one or more cardiac cycles and switch to a second pulse output configuration during one or more subsequent cardiac cycles in accordance with a
25 switching algorithm dependent upon the sensed parameter related to cardiac output.

12. The pacemaker of claim 11 further comprising intra-thoracic impedance sensor for sensing the to parameter related to cardiac output.

13. The pacemaker of claim 11 further comprising circuitry for outputting non-excitatory stimulation pulses to selected electrodes in conjunction with pacing pulses.

14. The pacemaker of claim 11 wherein the switching algorithm comprises
5 switching the pulse output configuration on a beat-to-beat basis.

15. The pacemaker of claim 11 wherein the switching algorithm comprises switching the pulse output configuration at a specified time interval.

10 16. The pacemaker of claim 11 wherein the switching algorithm comprises switching the pulse output configuration after a specified number of heart beats.

17. The pacemaker of claim 11 wherein a pulse output configuration is further defined as a temporal sequence of pulses output to the fixed electrodes during a
15 cardiac cycle.

18. The pacemaker of claim 11 further comprising a bipolar electrode having tip and ring electrodes for disposition near a heart chamber, and wherein the pulse output configuration is switched by alternating the polarity of the delivered pulses.

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19. The pacemaker of claim 11 wherein the switching algorithm further comprises switching the pulse output configuration in accordance with the mean or minimum heart rate measured over a time interval.

25 20. The pacemaker of claim 11 wherein the switching algorithm further comprises switching the pulse output configuration in accordance with a sensed time delay of a depolarization occurring in an area of the myocardium after delivery of a pacing pulse.